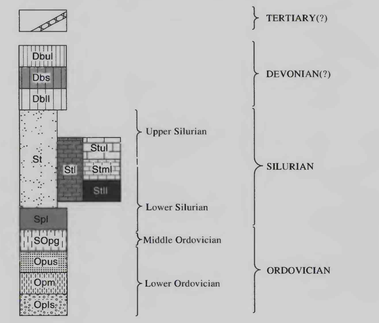
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

PROFESSIONAL PAPER 1555
PLATE 1

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Intrusive rocks (Tertiary?) Bundtzen and others, 1987—Intrusive igneous dikes, sills, and small stocks (most are not shown). Dark greenish-gray, weathers to orange-brown; porphyritic, mafic to intermediate in composition. For more detailed description, see Bundtzen and others (1987)

Barren Ridge Limestone (Devonian?)

Dbul — **Upper limestone member**—Medium-dark-gray limestone, thick- to thin-bedded, planar to cross-laminated. Weathers medium gray. Finely crystalline, with some secondary light-colored dolomite. Some minor yellowish-orange cross-laminated silty limestone interbeds. 130 m thick

Dbs — **Siltstone member**—Very thin bedded calcareous siltstone and sandy limestone. Slabby to shaly, yellowish weathering, cross-laminated, relatively nonresistant. 180 m thick

Dbll (ls) — **Lower limestone member**—Same lithology as upper limestone member (Dbul). 70 m thick. Locally includes resistant limestone marker bed (ls)

St — **Terra Cotta Mountains Sandstone (Upper and Lower Silurian; Ludlovian and Wenlockian)**—Sandstone, calcareous, with rhythmically interbedded siltstone, mudstone, argillite, and sandy limestone. Thick limestone units are mapped separately as members. Sandstone is micaceous, quartzofeldspathic wacke with prominent graded bedding and sole markings characteristic of turbidites. Distinctive olive-brown color, weathering orange-brown. 500 m thick exclusive of limestone members. Locally contains knobby-limestone marker bed (arc pattern). Includes local carbonate conglomerate/breccia (triangle pattern in section *L-M*). Locally divided into one or more members:

Stll — **Limestone member**—Undifferentiated (Silurian)

Stul — **Upper limestone member (Upper Silurian; Pridolian and Ludlovian)**—Thin- to thick-bedded, planar, laminated limestone. Medium dark gray; weathering medium gray, blocky to slabby. Nonfossiliferous except for domal stromatolite(?) structure. 100 m thick

Stml — **Middle limestone member (Lower Silurian; Wenlockian)**—Planar, laminated, silty limestone. Dark gray, finely crystalline. Characterized by pelecypods and straight-shelled cephalopods. 35–60 m thick

Stll — **Lower limestone member (Lower Silurian; Wenlockian)**—Thick-bedded, relatively pure limestone; medium dark gray, in part mottled very pale brown. Blocky except in basal part where limestone is laminated and platy to slabby. 45–60 m thick

Post River Formation (Lower Silurian to Lower Ordovician; Llandoverian to Tremadocian)

Spl — **Limestone member (Lower Silurian; Llandoverian)**—Dark-gray, laminated, argillaceous limestone with graptolitic-shale partings. Limestone is thin bedded and can be split into platy and slabby fragments having graptolite-bearing surfaces. 18 m thick

SOpg — **Graptolite Canyon Member (Lower Silurian to Lower Ordovician; Llandoverian to Arenigian)**—Dark-gray graptolitic shale and banded siliceous shale–mudstone with graptolitic partings. Siliceous marker bed, 3 m thick, with prominent worm casts (pattern) near middle part of member. Rare thin interbeds of argillaceous dolomite. 300 m thick

Opus — **Upper siltstone member (Lower Ordovician; Arenigian)**—Calcareous siltstone interbedded with silty shale. Lithologically similar to lower siltstone member (Opls). Graptolites common locally. 30 m thick

Opm — **Mudstone member (Lower Ordovician; Arenigian)**—Dark-gray, nonfissile, silt-rich argillaceous rock or mudstone. Splits into rough-surfaced slabs that commonly bear pyritized graptolites. 75 m thick

Opls — **Lower siltstone member (Lower Ordovician; Tremadocian)**—Calcareous and micaceous siltstone and sandstone, interbedded with silty shale. Characterized by thin rhythmic bedding and cross lamination. Medium gray with olive tint, weathering pale yellowish orange. Sand and silt grains are mainly quartz and muscovite, Bedding planes uneven, crinkly, with phyllitic partings. Multibranched graptolites present but very rare. 50+ m thick

Contact—Dashed where approximately located; dotted where concealed; queried where inferred

Fault—Dashed where approximately located; dotted where concealed; queried where inferred. Ball and bar on downthrown side. Arrows indicate relative horizontal movement and direction of dip

Fault (or lineament) from aerial photographs—Not checked or identified on ground

Thrust fault—Sawteeth on upper plate; dashed where approximately located or concealed. Arrow on section shows relative movement

Anticline—Showing trace of axial plane and direction of plunge of axis; dashed where approximately located

Syncline—Showing trace of axial plane and direction of plunge of axis; dashed where approximately located; dotted where concealed

Minor anticline—Showing direction of plunge

Minor syncline—Showing direction of plunge

Overturned anticline—Approximately located

Overturned syncline—Approximately located

Strike and dip of beds

- **Dip known**
- **Dip known and top known from sedimentary features**
- **Dip unknown**
- **Overturned, tops known**
- **Vertical**
- **Horizontal**
- **Crumpled, plicated, crenulated, or undulatory beds and average dip**

Strike and direction of dip of joints

Strike and dip of schistosity

Strike of vertical schistosity

Strike and dip of schistosity and parallel bedding

Graptolite collection site—Letter refers to table 1.1 (on sections only)

Graptolites identified in field but not collected (on sections only)

Shelly-fossil locality (on sections only)

Field camp location—Camp number and year (on section *E-F-G* only)

Table 1.1. *Graptolite localities shown on cross sections*

Section symbol	Sample No.	Age	Graptolite zone
		Sections *A-B-C-D* and *E-F-G*	
a	69ACn391	Ordovician	*Paraglossograptus tentaculatus*
b	69ACn311	Ordovician	approx. *Diplograptus? decoratus*
c	69ACn321	Ordovician	*P. tentaculatus*
d	69ACn331	Ordovician	*Tetragraptus approximatus*
e	69ACn335	Ordovician	*Climacograptus bicornis*
f	69ACn362	Silurian	*Monograptus spiralis*
g	69ACn373	Silurian	*Cyrtograptus lundgreni*
h	69ACn381	Middle or Late Ordovician(?)	
i	70ACn423	Early Silurian	Mixed fauna in float
		Section *H-I*	
a	70ACn22	Late Silurian (Ludlovian)	
b	70ACn31	Silurian	*Cyrtograptus sakmaricus–C. laqueus*
c	70ACn33	Silurian	*M. spiralis*
d	70ACn35	Silurian	*M. spiralis*
e	70ACn51	Ordovician	*C. bicomis*
f	70ACn62	Ordovician	*C. bicomis*
g	70ACn71	Ordovician	*D.? decoratus*
h	70ACn72	Ordovician	*D.? decoratus*
i	70ACn81	Ordovician	*P. tentaculatus*
j	70ACn82	Ordovician	*Oncograptus*
k	70ACn312	Ordovician	*Tetragraptus fruticosus*
l	70ACn301	Ordovician	*D.? decoratus*
		Section *J-K-L-M*	
a	69ACn501	Early Ordovician, undifferentiated	
b	69ACn522	Ordovician	*T. approximatus ?*
c	69ACn502	Ordovician	*T. fruticosus*
d	69ACn542	Ordovician	*D.? decoratus*
e	69ACn552	Ordovician	*Dicellograptus*
f	69ACn572	Ordovician	*Climacograptus tubuliferus*
g	69ACn574	Ordovician	*C. tubuliferus*
h	69ACn576	Ordovician	*C. tubuliferus*
i	69ACn583	Early Silurian?	
j	70ACn173	Silurian	*Cyrtograptus centrifugus*
k	70ACn532	Early Silurian	
l	70ACn552	Silurian	Approx. *Monograptus ludensis*

Base from U.S. Geological Survey, 1:63,360, McGrath (A-1), (A-2), (B-1), (B-2), 1958
Universal Transverse Mercator projection

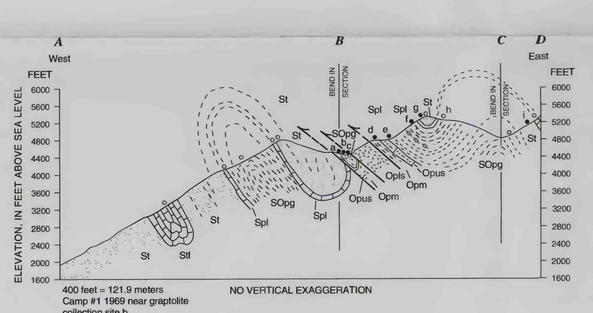
SCALE 1:24 000

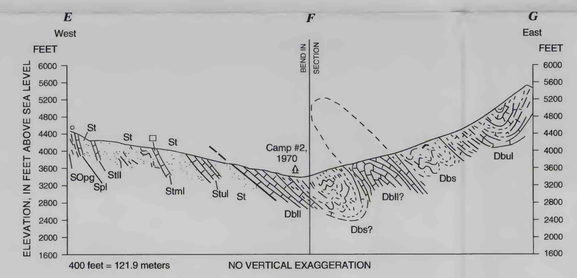
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 5 0 1 KILOMETER

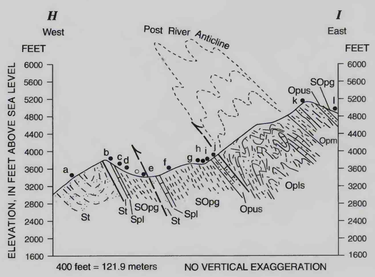
CONTOUR INTERVAL 100 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

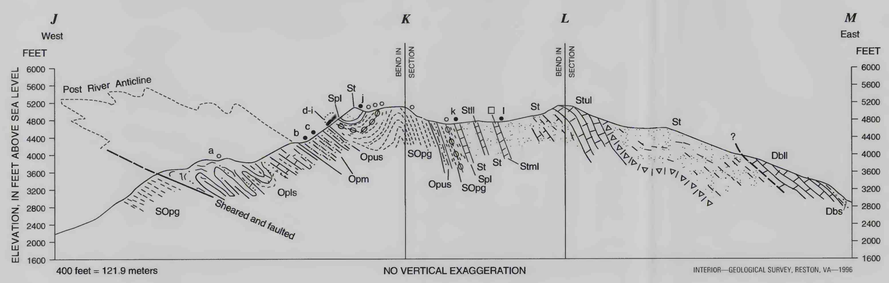
AREA OF MAP

Geology by Michael Churkin, Jr.; assisted by William Kerr, 1969, Rod May, 1970, and Gary Winkler, 1976, and by Bruce Reed and Mike Estlund









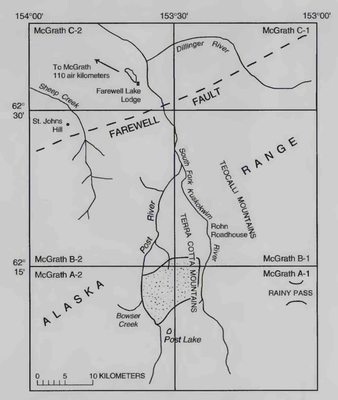
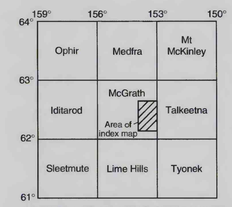


Figure 1.1. Index map showing area around Terra Cotta Mountains and names of topographic quadrangle maps. Area of report is stippled.



INDEX OF 1:250,000-SCALE QUADRANGLES OF REGION

GEOLOGIC MAP AND CROSS SECTIONS OF PART OF THE TERRA COTTA MOUNTAINS, ALASKA RANGE, CENTRAL ALASKA

By

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA—1996